

velosit



semper velox



Swimming Pool - Guatemala
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Waterproofing Systems

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Crystalline Waterproofing

Crystalline waterproofing is a unique technology that reduces pore diameter and pore volume in concrete.

There are two ways of achieving this effect, internally by adding the chemistry to fresh concrete or externally by coating a concrete body with a slurry containing the chemicals which migrate into the concrete's surface pores. In both cases water-soluble salts accumulate inside the capillary pores and react with dissolved Calcium Hydroxide released during cement hydration. The reaction results in a dense network of insoluble crystals that fill up pores and cracks, thus significantly increasing resistance against hydrostatic pressure. Due to the reaction mechanism crystalline waterproofing is only suitable for concrete substrates.

The waterproofing properties are achieved by crystal formation which takes a few days of water contact to fully develop.

This smart use of chemistry is permanent and stays actively dormant inside the concrete for the whole life span of the structure. The most amazing feature is the resulting property of the concrete to self seal static cracks up to 0.5 mm.

Crystalline waterproofing is a very economical method and works wherever a stand-alone waterproofing is needed.

Typical applications are:

- Water tanks
- Wastewater treatment plants
- Dams
- Tunnels
- Below grade waterproofing
- Elevator pits
- Manholes

Due to the crystal formation - which may also appear on the surface - crystalline slurry coatings are not the preferred option for structures that require further coatings or coverings.

We offer various alternative waterproofing systems based on our cementitious range of slurries for these types of application.



Sewage Plant - Santa Teresa - Guatemala

Crystalline Admixtures

Our crystalline concrete admixtures range fulfill the requirements of a waterproofer according to EN 934-2 table 9. The products add the self sealing effect and improve resistance to hydrostatic pressure to most concrete mix designs. Only concrete formulations with extremely high water/cement ratios or here very high pozzolanic content may pose a limit to the use of this technology.

VELOSIT® CA 112

Crystalline Admixture

- low dosage
- watertight plastic bags
- resists hydrostatic pressure of 16 bars (232 psi)
- self sealing of cracks up to 0.5 mm wide

VELOSIT® CA 113

Hydrophobic Crystalline Admixture

- water repellent surface
- reduced efflorescence
- watertight plastic bags
- resists hydrostatic pressure of 16 bars (232 psi)
- self sealing of cracks up to 0.5 mm wide

Watertight Concrete Structures

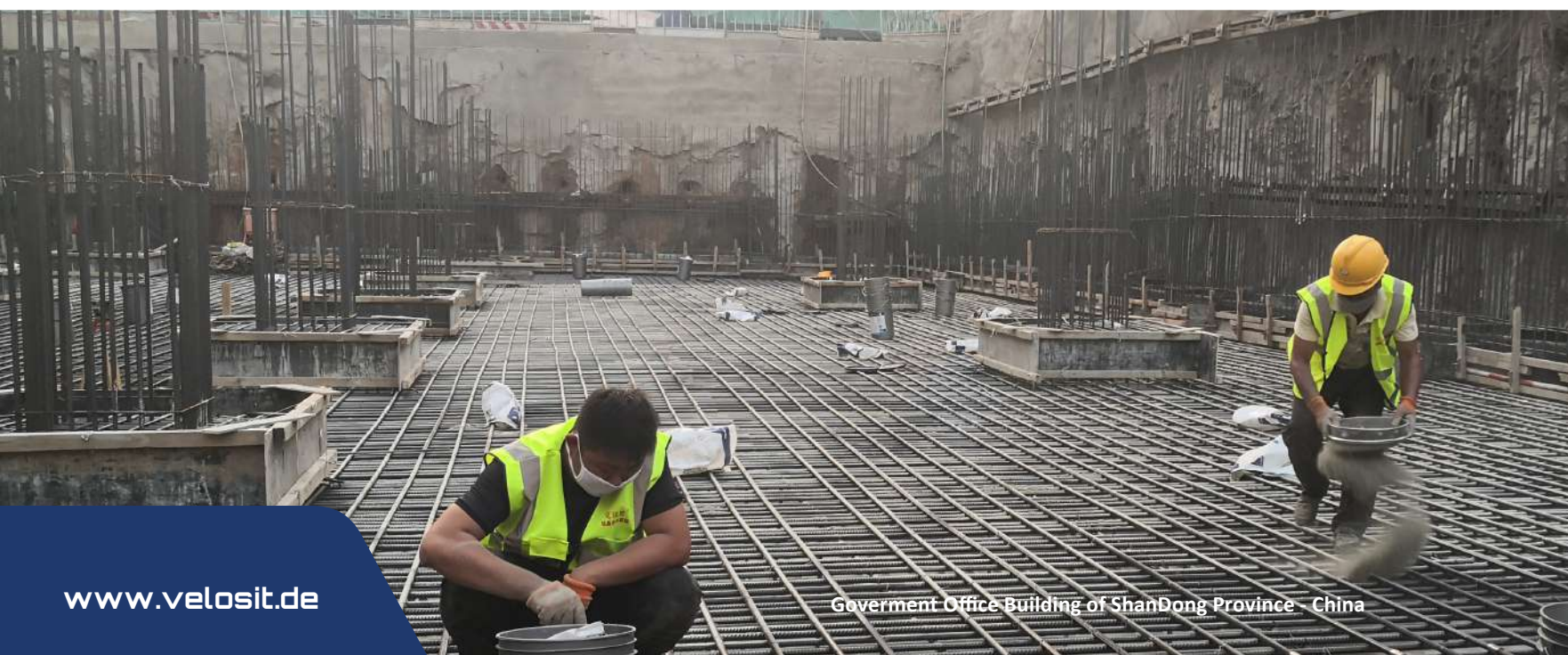
Besides the concrete itself, most structures have vulnerabilities that need special attention to achieve a complete waterproofing system. Joints, pipe penetrations and other protrusions can be tightly waterproofed using our swellable waterstop **VELOSIT® WS 801**.

Other joint treatment solutions are available from **VELOSIT**.

VELOSIT® WS 801

Swellable Waterstop

- + 1000 % volumetric swelling on water contact
- swell pressure > 5 bar (73 psi)
- profile engineered to minimize side pocketing
- interior or exterior application



Government Office Building of ShanDong Province - China



Negative Side Waterproofing

Although crystalline waterproofing slurries work extremely well on the positive side of a water retaining structure, they are especially suitable for negative side applications on concrete surfaces. Due to the unique binder which develops extreme adhesion and because of the penetrating chemistry, these slurries become an integral part of the concrete surface giving them unsurpassed properties in this application field.

Our repair system for leaking concrete structures uses the plug cement **VELOSIT® PC 222** to immediately stop water seepage through the concrete body. **VELOSIT® PC 221** is the most economical solution to plug a leaking crack and may be combined with our injection resins if needed.

The surface waterproofing is afterwards achieved with the crystalline slurry coat of **VELOSIT® CW 111**.

Where thicker applications are required, the substrate can be leveled with **VELOSIT® RM 211**. The system is used on basement walls, exterior plugging of leaking concrete water tanks or to stop seepage through concrete ceilings.

VELOSIT® CW 111 may also be applied on the positive side to waterproof retaining structures such as potable water tanks, dams or sewage treatment plants. On concrete slabs, the application as a dry shake makes the waterproofing extremely economical as it cuts out a whole working step.

VELOSIT® CW 111 is applied in powder form onto the slab during the initial set and power-troweled into the surface.

VELOSIT® CW 111

High Strength Crystalline Slurry

- rapid strength development with exceptional adhesion
- no water curing required
- self sealing of cracks up to 0.5 mm wide

VELOSIT® RM 211

Crystalline Repair Mortar

- waterproof
- rapid strength development
- for concrete substrates

VELOSIT® PC 221

Crystalline Plug Cement

- stops water flow in minutes
- 1 min. working time
- shrinkage compensated

VELOSIT® PC 222

Flash Setting Plug Cement

- sets immediately in contact with water
- stops water seepage
- sets within 10 – 15 seconds

Injection Resins

Our range of injection resins are used to waterproof projects where our plug cements reach their technical limits. This for example is the case when large amounts of water leak through a crack or joint with dynamic movement resulting in leakages that requires a flexible and tight seal.

VELOSIT® IR 601 is used to stop the immediate water flow. The polyurethane resin reacts quickly with water and creates a semi-flexible foam that blocks the water. The reaction speed can be adjusted with a catalyst to react on all types of situations in regards to water flow, temperature and crack width. A permanently flexible water seal can be achieved with **VELOSIT® IR 605**, which is a 2 component polyurethane resin. It is used in situations where higher crack movement is expected. Another approach to leaking cracks is the curtain injection of our acrylate injection resin **VELOSIT® IR 604**. This approach does not close the leakage itself, but creates a gel type waterproofing behind the leaking wall.

VELOSIT® IR 601

Semi-flexible Injection Resin

- 1-comp. PU resin
- foams in contact with water
- stops water flow immediately
- foaming speed can be controlled by adding a catalyst

VELOSIT® IR 604

Acrylate Injection Gel

- 3-comp. water based acrylate gel
- for curtain waterproofing
- fills large voids

VELOSIT® IR 605

Flexible Injection Resin

- foams and forms a flexible seal
- able to accommodate crack movement
- reinstates integrity of the cracked concrete



Cementitious Waterproofing Slurries

Cementitious waterproofing slurries are available in various grades of flexibility, depending on the polymer content. The rigid slurries with their moderate polymer modification behave very similar to concrete. On the other hand, the flexible types are in-between an acrylic coating and concrete, i.e. combine crack bridging properties with good adhesion on wet surfaces.

These products are very good substrates for paint, coatings, tile or carpet adhesives and can be used as a stand alone solution or in combination with tiles.

Flexible Slurries

Our flexible slurries like **VELOSIT® WP 120** or **VELOSIT® WP 124**, are ideal for waterproofing of tiled swimming pools or any other structure that may slightly move during its normal use.

VELOSIT® WP 124 is designed to give two options with one product. Mixed as a regular kit of 33 kg (25 kg powder + 8 kg liquid), a crack bridging and flexible membrane is achieved. By using only half the polymer, the same product can be mixed to give a semi-flexible waterproofing that with very high resistance against negative side water pressure.

The flexible waterproofing slurries can take a certain degree of motion. For dynamic cracks or joints, the waterproofing is reinforced with a joint tape capable of handling a lot more movement. Our **VELOSIT® DB 830** is a very thin, but extremely flexible, joint tape that contains a membrane with 300 % elongation and a resistance to 5 bar (73 psi) water head from the positive side.

VELOSIT® WP 124 Flexible Waterproofing Slurry

- can be mixed to produce flexible or semi-flexible versions
- resists 5 bar (73 psi) water pressure
- crack bridging (flexible version)

VELOSIT® WP 120 Elastomeric Waterproofing Slurry

- fast curing
- crack bridging capability
- excellent adhesion
- > 100 % elongation

VELOSIT® DB 830 Joint Sealing Tape

- reinforcement of flexible waterproofing
- slim thickness with high elongation
- perfectly embedded into VELOSIT® WP 120

Rigid Slurries

Rigid waterproofing slurries are used against negative and positive side water pressure. They withstand extreme water pressures and develop an exceptional bond to the substrate.

The rigid slurries **VELOSIT® WP 100** and **VELOSIT® WP 101** can be installed in tanking systems where no movement is expected, for example below grade water tanks, planters, slabs-on-grade etc. Both are also a very good solution for negative side waterproofing and an ideal prime coat for the flexible waterproofing systems as they are suitable to fill substrate voids and resist negative side water pressure.

For projects with a requirement for a higher application thickness our concrete repair mortar **VELOSIT® RM 205** may be used.

VELOSIT® RM 205 Watertight Concrete Repair Mortar

- high final strength >50 MPa (7250 psi), class R4 acc. to EN 1504-3
- resists 5 bar (73 psi) positive and negative water pressures
- 6 - 100 mm application thickness

VELOSIT® WP 101 High Strength Waterproofing Slurry

- rapid strength development of > 50 MPa (7250 psi)
- resists 5 bar (73 psi) water pressure positive and negative side
- no water curing needed
- excellent adhesion

VELOSIT® WP 100 Rigid Waterproofing Slurry

- quick strength development of > 30 MPa (4350 psi)
- resists 5 bar (73 psi) water pressure
- very good adhesion



Sewage Plant - Sunbury - Australia



Ritz-Carlton Hotel - Amman - Jordan





VELOSIT is a young and innovative company. We combine decades of experience in R&D, production and consulting for high performance construction materials which are fully conversant with modern construction techniques.

Our mission is to make construction faster, easier and less tedious. **VELOSIT** products allow you to finish your project significantly faster without compromising on quality.

VELOSIT supplies the construction industry with state-of-the-art alternative solutions. Production „made in Germany“ stands for uniform quality to the highest standards.

If you have questions - just give us a call!

We can individually tailor a suitable solution for you. Our service and technical support will gladly help.